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9.0 CONDUCT OF OPERATIONS

This chapter describes Foster Wheeler Environmental Corporation's (FWENC) organization and controls for the design, construction, operation, and decommissioning of the Idaho Spent Fuel (ISF) Facility. Programs, policies, and procedures are implemented to ensure that ISF Facility activities are performed safely, legally, and efficiently. This chapter summarizes administrative controls of the ISF Facility, including oversight, audits, assessments, reporting, and record keeping.

9.1 ORGANIZATIONAL STRUCTURE

This section discusses the organizational structures established for ISF Facility design, construction, pre-operational testing, startup, operation, and decommissioning. Figure 9.1-1 through Figure 9.1-4 illustrate these organizational structures. Section 9.1.1 discusses the corporate organization, relationships with contractors and suppliers, and technical staffing. Section 9.1.2 discusses the ISF Facility operating organization.

9.1.1 Corporate Organization

FWENC is the ISF Facility Licensee and retains full authority for the design, engineering, construction, quality assurance (QA), testing, operation, and maintenance of the ISF Facility. The FWENC corporate organization and its relationship to the ISF Facility are shown in Figure 9.1-1.

The financial capabilities for construction, operation, and decommissioning of the ISF Facility are presented in Section 1.5 of the License Application (Ref. 9-1).

9.1.1.1 Corporate Functions, Responsibilities, and Authorities

FWENC's Chief Executive Officer (CEO) is the corporate officer with overall responsibility for the ISF Facility. The Chief Operating Officer (COO) and the Director of Environmental, Safety and Quality (ESQ) Programs support the CEO in implementing ISF Facility operations.

The COO reports to the CEO. The COO is the corporate officer with executive responsibility for ISF Facility activities associated with engineering, construction, and operations.

The ISF Facility Manager reports to the COO and provides leadership and overall direction and coordination for the facility. Section 9.1.2.2 provides additional discussion of ISF Facility Manager duties and responsibilities.

The Director of ESQ reports directly to the CEO and has responsibility and authority for environmental compliance, health, safety, and quality issues. The Environmental, Safety, and Health (ES&H) Manager and Quality Manager support the Director of ESQ for ISF Facility activities.

The ES&H Manager reports to the Director of ESQ and is responsible for development of programs and implementing procedures for environmental compliance, radiation, and industrial safety. Section 9.1.2.2.6 further discusses the ES&H Manager duties and responsibilities.

The Quality Manager reports to the Director of ESQ and is responsible for developing, maintaining, and overseeing implementation of the *Quality Program Plan* (QPP) (Ref. 9-2). This direct line to the CEO

ensures an appropriate level of independence from line management in the quality function, including sufficient independence from cost and schedule issues. Individuals assigned to ensure effective execution of the QPP have direct access to the levels of management necessary to perform this function, at any location where activities under the QPP are being performed.

9.1.1.2 In-House Organization

This section describes the management and organizational relationships established for the design and construction review, including QA functions. Figure 9.1-2 shows the key management positions and their relationships to the Design and Construction Organization.

The ISF Facility Manager reports to the COO and has responsibility and authority for the design and construction review for the ISF Facility. The significant areas of ISF Facility Manager's responsibilities are listed in Section 9.1.2.2.1. The ISF Facility Manager is also responsible for ensuring that procedures, programs, and policies are developed, implemented, and maintained to ensure that design and construction activities are performed consistent with the QPP.

The Safety Review Committee (SRC) is a multi-disciplinary review organization responsible for reviewing modifications, plans, procedures, and other activities with elements classified important to safety (ITS). The SRC reports to the ISF Facility Manager. Section 9.1.2.2.10 further discusses the SRC.

The Quality Manager has the authority and responsibility to verify the adequacy and implementation effectiveness of the quality programs of the ISF Facility organization, including contractors and subcontractors. The Quality Manager is responsible for overseeing the ISF Facility activities to ensure that quality activities are implemented in accordance with the QPP and integrated with other facility management, administrative, and oversight programs as appropriate. During design and construction, the Quality Manager has the authority and responsibility to verify that ITS structures, systems, and components (SSC) are designed, procured, fabricated, inspected, and tested in accordance with the QPP. The Quality Manager has cease work authority for quality related issues.

The Chief Design Engineer is responsible for ensuring that:

- design activities are properly defined, planned, controlled, verified, and documented
- plans and procedures are developed, maintained, and implemented describing the design process, design interfaces, design verification, and design changes
- applicable design specification requirements are correctly translated into drawings, procedures, and instructions
- design documents (e.g., design specifications, design reports, code data reports, construction specifications, drawings, specifications, reports, and calculations) have been properly prepared, reviewed, approved, and certified (when required)
- analysis and design adequacy are independently verified, and for computational accuracy and appropriate use of computer programs that perform analytical operations
- As Low As Reasonably Achievable (ALARA) considerations have been appropriately incorporated into the ISF Facility design

The Chief Design Engineer has authority for the following:

- Approves design procedures and submittals
- Assures certification of design documents
- Approves design staff assignments

Three principal subcontractors support the ISF Facility design. Section 9.1.1.3 discusses their responsibilities and oversight. During design and construction of the ISF Facility, the technical staff reports to the Chief Design Engineer, as described in Section 9.1.1.4.

The Configuration Manager reports to the ISF Facility Manager and supports the Chief Design Engineer by establishing and maintaining procedures and programs associated with configuration management.

The Configuration Manager's responsibilities include:

- controlling, maintaining, and implementing a configuration management program
- ensuring configuration management procedures have been properly prepared, reviewed, and approved
- establishing, implementing, and maintaining the document control system

The Configuration Manager has authority for the following:

- Approves configuration management procedures and submittals
- Approves configuration staff assignments

The Construction Manager is responsible for performing constructability reviews during initial design and subsequent modifications. During construction, the Construction Manager oversees procurement and construction activities to ensure that the ISF Facility is constructed in accordance with design requirements. The Construction Manager is responsible for oversight of the acceptance testing of SSCs before turnover to operations for pre-operational testing. The Construction Manager is responsible for ensuring that construction and construction-related procurement activities are performed in accordance with the QPP (Ref. 9-2).

The Construction Manager has authority for the following:

- Cease work (construction phase)
- Secure properly trained and experienced craft personnel
- Source and recommend vendors and suppliers

The ES&H Manager, during design, assists the Chief Design Engineer, to ensure that industrial safety standards are incorporated into design. During construction, the ES&H Manager assists the Construction Manager in establishing safety programs and has the authority and responsibility for conducting assessments and audits to ensure that safety programs are effectively implemented. During construction the ES&H Manager's functions include the review and qualification of subcontractors before performance of onsite work. The ES&H Manager is responsible for providing results of these assessments and audits to

the Director of ESQ, and requesting corporate support for resolution of related issues. The ES&H Manager has authority for the following:

- Cease work
- Audit/surveillance of project ESH&Q performance
- Establish compliance with ES&H requirements
- Approves ES&H assignments

The Licensing Manager assists the ISF Facility organization to ensure that NRC regulatory requirements are incorporated into the design and administrative programs. The Licensing Manager is responsible for establishing procedures to ensure that the license basis documents remain consistent with facility operation and design. The Licensing Manager has authority for the following:

- Cease work
- Approve licensing staff assignments

The Operations Manager is responsible for providing operations input and operability reviews on the facility design during design and construction.

9.1.1.3 Interrelationships with Contractors and Suppliers

The ISF Facility is designed under the direct control and supervision of FWENC (the Licensee), with full authority, responsibility, and accountability for project activities. FWENC has the lead design responsibility. Three principal subcontractors and FWENC's Richland office will support ISF Facility design. The following table summarizes subcontractor and corporate support responsibilities.

Company	Responsibility
RWE NUKEM LTD.	Transfer Area design
ALSTEC, Ltd. (ALSTEC)	Storage Area design
Utility Engineering (UE)	building steel, steel structures design, and balance-of-plant design
FWENC Richland Office	American Society of Mechanical Engineers (ASME) component design and fabrication

In accordance with contractual requirements, a QA Program is established and maintained to ensure quality oversight of subcontractors. The QA Program incorporates applicable elements of the ASME/Nuclear Quality Assurance (NQA)-1 1994 Edition (with summer 1995 Addendum). Activities are overseen in accordance with the QPP. FWENC's Richland Office support is conducted in accordance with an ASME nuclear certified QA program. An Authorized Nuclear Inspector oversees the activities (Ref. 9-9).

As part of ISF Facility design and construction, equipment suppliers were contracted to provide ITS SSCs. FWENC issued specifications to these suppliers to develop system and component design, fabrication requirements, construction and installation details, and testing criteria. These activities are overseen in accordance with the QPP (Ref. 9-2). The table below identifies major equipment suppliers.

Company	Equipment, System, Component
ALSTEC	canister handling machine (CHM) turret
American Crane and Equipment Co.	cask receipt crane
Ederer, Inc	cask trolley, canister trolley, cask handling machine bridge and trolley
Mid Columbia Engineering	decanning machine
PAR, Inc	fuel handling machine (FHM)
Hot Cell Services	shield windows

Electrical, plumbing, and other specialty subcontractors will be used to complete ISF Facility construction activities as appropriate. Subcontractors must be qualified to perform activities in accordance with the QPP. Quality of work is ensured by routine oversight of activities by ISF Facility construction supervision and management and oversight in accordance with the QPP.

9.1.1.4 Technical Staff

This section describes the corporate technical staff under the direction of the Chief Design Engineer. Figure 9.1-3 depicts the technical staff organization. Corporate technical staff and consultant support for ISF Facility engineering, construction, and operation report functionally to the ISF Facility Manager. Section 9.1.2 discusses onsite staffing for the construction, pre-operational testing, and operation. Corporate and consultant technical staff support must meet the qualification requirements for onsite technical staff as provided in Section 9.1.3, *Personnel Qualification Requirements*.

The Chief Design Engineer retains design oversight of the entire facility and is supported by three project engineers, with specific assigned responsibilities shown on Figure 9.1-3. Five discipline-area engineers and Utility Engineering, RWE NUKEM LTD., and ALSTEC support these project engineers.

The Lead Civil Engineer is responsible for review and approval of the civil design associated with ISF Facility structures. Responsibilities include preparation, review, and approval of the site seismic analysis, structural drawings, calculations, and analyses to ensure compliance with applicable design codes.

The Lead Mechanical Engineer is responsible for review and approval of the mechanical design aspects of the ISF Facility SSCs. These responsibilities include preparation, review, and approval of mechanical drawings, calculations, and analyses including the thermal and stress analyses of the storage components (e.g., ISF canisters and storage tubes).

The Lead Nuclear Engineer is responsible for the preparation, review, and approval of analyses related to criticality, nuclear decay heat generation, and radiation dose calculations.

The Lead Process Engineer is responsible for the preparation, review, and approval of the fuel and waste handling processes, and ensures that the these processes are integrated with the design.

The Lead Electrical Instrument and Control Engineer is responsible for the preparation, review, and approval of design activities associated with electrical distribution, instrumentation, and control systems.

Utility Engineering provides civil/structural design support for the steel structures in the Cask Receipt Area, Transfer Area, and Storage Area. In addition, Utility Engineering provides design support for the

heating, ventilation, and air conditioning (HVAC) systems. FWENC retains responsibility and approval authority for the design. Utility Engineering's work is overseen by in-house review by FWENC engineering staff in addition to the oversight required by the QPP (Ref. 9-2).

RWE NUKEM LTD., formerly AEA, is responsible for the FPA layout and for supporting development of design requirements and specifications of SSCs used for receipt and handling of the received fuel, including:

- cask trolley
- Transfer Area port plugs
- shield windows
- master/slave manipulators (MSM)
- special lifting fixtures (e.g., FHM lifting fixtures)
- FHM
- worktable and ancillary equipment
- canister trolley

FWENC retains responsibility and approval authority for the design specifications. The work performed by RWE NUKEM LTD. is overseen by in-house review by FWENC engineering staff, in addition to the oversight required by the QPP.

ALSTEC, formerly ALSTOM, is responsible for the design of the Canister Closure Area (CCA), storage vault, ISF canister internals (baskets), and the design and fabrication of the CHM. FWENC retains responsibility and approval authority for the design. ALSTEC's work is overseen by in-house review by FWENC engineering staff, in addition to the oversight required by the QPP.

The ISF canisters and storage tubes are to be designed and fabricated to ASME requirements (see Section 4.2.1). The FWENC Richland Office is an ASME-certified design organization and has responsibility for ISF canister and storage tube design. An Authorized Nuclear Inspector will oversee ASME work performed by FWENC's Richland Office.

Qualifications of the ISF Facility technical staff are discussed in Section 9.1.3.

9.1.2 Operating Organization, Management, and Administrative Control System

This section describes the structure, functions, and responsibilities of the ISF Facility operating organization. This description includes the ISF Facility onsite organization, personnel functions, responsibilities, and authorities. The operating organization consists primarily of the onsite organization shown in Figure 9.1-4.

9.1.2.1 Onsite Organization (Operations)

The ISF Facility organization is set up along functional lines that integrate assigned responsibilities and interrelationships of functional areas such as design, engineering, procurement, licensing, business,

ES&H, quality, maintenance, and operations. Responsibilities and authorities of key personnel are summarized in Section 9.1.2.2. ITS functions and responsibilities such as nuclear criticality safety, QA, operations, health physics, maintenance, engineering, training and qualification, and emergency planning and response are noted in the applicable position descriptions. Each functional area manager is responsible for ensuring that personnel are properly qualified and authorized to perform assigned duties. Figure 9.1-4 depicts the overall ISF Facility functional relationship.

The ISF Facility modes of operation are based on the spent nuclear fuel (SNF) handling activities, which fall into the following four operational modes:

- receipt operations
- loading operations
- canister handling
- storage operations

Operations at the ISF Facility can encompass any combination of these activities. Each operational mode can be related to the confinement boundary provided for the SNF handling activities. For each operational mode, minimum staffing levels are established. Each of these operational modes is discussed below.

Receipt Operations

Receipt operations include activities associated with handling the SNF while it is contained in a transfer cask. Receipt operations begin when the transfer cask is received at the ISF Facility, and end when the first transfer cask lid bolt is detensioned. During receipt operations, the confinement boundary for the fuel is the transfer cask. Minimum operational staffing during receipt operations will consist of one shift supervisor and one equipment operator.

Loading Operations

Loading operations include activities associated with repackaging the fuel into ISF canisters. Loading operations exist whenever: (1) SNF is contained in a transfer cask without a fully tensioned closure lid; (2) fuel is in the fuel packaging area; or (3) fuel is in an ISF canister that has not completed its leak rate acceptance test. During loading operations, the confinement boundary for the SNF consists of the ISF Facility structures and systems as described in Section 3.3.2. During loading operations the minimum staffing include one shift supervisor, one certified operator, one equipment operator, and one radiation protection technician.

Canister Handling

Canister handling operations exist when SNF is contained in an ISF canister that has passed its leak rate acceptance test and the ISF canister is not contained in a sealed storage tube. During canister handling operations, the confinement boundary for the SNF is provided by the ISF canister structural integrity. Minimum operational staffing during canister handling operations will be one shift supervisor.

Storage Operations

Storage operations exist when an ISF canister containing SNF is contained in a sealed storage tube. During this mode of operation, the fuel is contained within a double confinement boundary, and decay heat is passively removed by natural convection. With the ISF Facility in this configuration there will be no active operations, and the minimum operational staffing will consist of one shift supervisor.

Adequate staffing levels will be maintained to ensure radiation doses for individuals remain below the limits allowed by 10 CFR 20.1201(a). Section 7.4.1 provides a summary of the operational dose assessments. Section 7.1 discusses the ISF Facility's commitment to an ALARA program and the monitoring of personnel exposure to ensure compliance with administrative and regulatory limits.

9.1.2.2 Personnel Functions, Responsibilities, and Authorities

9.1.2.2.1 ISF Facility Manager

The ISF Facility Manager reports to FWENC's COO and provides leadership and overall direction and coordination for the facility. The ISF Facility Manager is responsible for the safe overall operation of the ISF Facility in accordance with FWENC and ISF Facility policies and programs and the NRC license. The ISF Facility manager shall hold line managers, including direct reports, accountable for implementing necessary controls for safe performance of work in their area of responsibility. The ISF Facility Manager's duties and responsibilities associated with facility design and construction are provided in Section 9.1.1.2.

The ISF Facility Manager or designee has the following responsibilities:

- establish and implement policies, programs, and procedures to ensure the safe, legal, and efficient operation of the ISF Facility
- establish and implement policies, programs, and procedures to ensure that the quality requirements of the QPP are achieved
- ensure that regulatory requirements, commitments, and required notifications to NRC and other agencies are satisfied
- cease work activities associated with the ISF Facility and/or initiate emergency procedures in an emergency or abnormal condition, and authorize resumption of work activities when the initiating condition has been determined and corrective action has been taken to prevent recurrence
- certification of personnel to operate equipment and controls ITS in accordance with the *Operator Training and Certification Plan* (Ref. 9-6)
- review and approve proposed facility modifications, procedural changes, and test to ensure they do not require prior NRC approval in accordance with 10 CFR 72.48
- ensure that subordinate or delegated responsibilities, assignments, and authorities are understood and implemented by ISF Facility staff
- ensure that adequate resources, staffing, and training are available to safely operate the ISF Facility

9.1.2.2.2 Operations Manager

The Operations Manager provides direct oversight and exercises upper-level management control over the operations activities through direction and oversight of the shift supervisors. The Operations Manager's responsibilities include oversight and direction of the following ISF Facility operations activities:

- safe daily ISF Facility operations and maintenance
- cessation of work activities associated with the ISF Facility and/or initiation of emergency procedures in an emergency or abnormal condition
- adherence to applicable local, state, and Federal regulations and Technical Specifications
- implementation of FWENC policies, programs, and procedures by shift operators
- identification and resolution of shift crew performance weaknesses
- development and implementation of operating procedures

The Operations Manager has responsibility and oversight of the following positions:

Shift Supervisor. The Shift Supervisor has overall responsibility to ensure that shift operations of the ISF Facility are safely conducted in accordance with FWENC and ISF Facility procedures, policies, and Technical Specifications. The Shift Operating Organization retains full authority and responsibility for the safety of the SNF. When the ISF Facility Manager and Operations Manager are not on site, the Shift Supervisor is the onsite senior management representative for matters pertaining to safe operation of the ISF Facility, with authority and responsibility to cease work activities and/or initiate emergency procedures in an emergency or abnormal condition.

Certified Operator. Reports to the Shift Supervisor and has responsibility to safely conduct fuel movement activities in accordance with FWENC and ISF Facility procedures, policies, and Technical Specifications. The Certified Operator conducts applicable surveillance to meet the requirements of the Technical Specifications.

Equipment Operator. Reports to the Shift Supervisor and has responsibility to safely conduct operations of support systems and components under the direction of a Certified Operator in accordance with FWENC and ISF Facility procedures, policies, and Technical Specifications. The Equipment Operator conducts applicable surveillance to meet the requirements of the Technical Specifications. The Equipment Operator monitors operation of systems and components at the ISF Facility and performs switching and safety tagging operations to support maintenance activities.

9.1.2.2.3 Technical Services Manager

The Technical Services Manager reports to the ISF Facility Manager and provides oversight and direction of engineering activities associated with ISF Facility design, maintenance, and operation, fire protection, licensing, configuration management, and fuel accountability. The Technical Services Manager oversees and directs onsite engineering and technical staff for the following functions and activities for support of ISF Facility operation and maintenance activities.

- Maintenance
  - development and maintenance of corrective and preventive maintenance procedures
  - performance of maintenance activities
- Fire Protection
  - maintenance of the fire hazards analysis
  - development and implementation of fire protection procedures
  - development of fire pre-plan procedures
- Engineering
  - development and review of facility modifications
  - development and maintenance of facility surveillance procedures
  - provide engineering support to operations and maintenance as required to support ISF Facility operations
- Configuration Management
  - development and implementation of document control procedures
  - control of records storage and retrieval
  - development and implementation of procedures for configuration control of the ISF Facility design

9.1.2.2.4 Shift Engineer

The Shift Engineer is an individual on the technical services staff assigned to shift operations. The Shift Engineer's duties include the following:

- monitor criticality and nuclear fuel engineering functions
- act as the staff technical expert on nuclear engineering and nuclear physics
- monitor the performance of ISF Facility systems that affect nuclear safety, including criticality safety, fission product confinement, decay heat removal, and radiological doses associated with SNF handling
- review procedure changes and modifications affecting nuclear safety and make appropriate recommendations to the Operations Manager and Technical Services Manager
- review facility operating data for trends that could potentially affect nuclear safety
- investigate abnormalities or unusual occurrences related to SNF shipping receipt, repackaging operations, and canister storage
- ensure that SNF accountability and management procedures are implemented

9.1.2.2.5 Administrative Services Manager

The Administrative Services Manager reports to the ISF Facility Manager and oversees and directs administrative and training functions at the ISF Facility, including:

- maintaining training records and notifying applicable functional manager of qualification of staff personnel
- establishing and maintaining ISF Facility training programs including the *Operator Training and Certification Plan* (Ref. 9-6)

9.1.2.2.6 ES&H Manager

The ES&H Manager supports the ISF Facility Manager in day-to-day operations but reports to the Director of ESQ for issues involving personnel health or safety. This direct line to the Director of ESQ ensures appropriate independence from line management in health safety functions, including sufficient independence from cost and schedule issues.

The ES&H Manager is responsible for environmental, health and safety, emergency planning, security, and administers radiation safety at the ISF Facility. The ES&H Manager has the authority to cease work activities not in compliance with environmental, safety, or radiation protection programs or procedures. The ES&H Manager oversees and directs the following ISF Facility activities.

- developing and implementing industrial health and safety procedures
- complying with applicable Occupational Safety and Health Administration (OSHA) standards
- ensuring compliance with environmental permit requirements
- planning and direction of radiation protection and ALARA programs
- development and implementation of radiation protection procedures
- packaging, storing, and shipping of radioactive waste
- advising and informing the ISF Facility Manager on matters pertaining to radiological safety, including the status of radiological health aspects of facility operation and maintenance and the identification of potential radiological concerns
- maintaining radiation protection-related records and monitoring for trends that may affect ISF Facility operation
- ensuring that the ISF Facility is maintained in a state of readiness for effective emergency response in accordance with the *Emergency Plan* (Ref. 9-7)
- ensuring adequacy of the *Emergency Plan* implementing procedures, including that the ISF Facility staff is adequately trained in emergency response, and that emergency response facilities and equipment are adequate and properly maintained in a state of readiness
- establishing and maintaining physical security in accordance with the *Physical Protection Plan* (Ref. 9-5)

9.1.2.2.7 Radiation Safety Officer

The Radiation Safety Officer (RSO) is responsible for implementing the Radiological Protection Program as directed by the ES&H Manager. The RSO has the authority to cease work activities not in compliance with radiation protection or ALARA program requirements The RSO supervises radiation protection technicians in performance of their assigned duties, which include:

- monitoring radiological and environmental conditions
- determining and evaluating radiation hazards in relation to prescribed limits
- developing and recommending control and protective measures for radiological conditions
- performing radiation surveys of ISF Facility areas and equipment to define existing and potential hazards
- monitoring worker practices to ensure compliance with radiation protection and ALARA program requirements
- packaging and storing radioactive waste associated with radiation protection operations in accordance with applicable requirements
- calibrating survey and analytical instruments
- developing and implementing personnel monitoring activities, including maintenance of personnel exposure records and environmental survey records
- maintaining radiation protection logs
- performing investigations of personnel overexposure and excessive contamination and reporting the findings and corrective action recommendations to the RSO

9.1.2.2.8 Radiation Protection Technicians

Radiation protection technicians advise the RSO and the Shift Supervisor of any abnormal radiological condition that could result in an unusual hazard. In the absence of the RSO, the radiation protection technician is responsible for radiation monitoring and control functions during emergency conditions.

9.1.2.2.9 Quality Manager

The Quality Manager reports to Director of ESQ and is responsible for the development and maintenance of the auditing and verification functions of the QPP (Ref. 9-2). The Quality Manager, through performance of QA audits and surveillance of project performance, ensures compliance with QPP requirements. The Quality Manager's responsibilities include:

- initiating a work cessation action when necessary, to ensure implementation of the QPP
- overseeing implementation of the QPP to meet the requirements of 10 CFR, Part 72, Subpart G (Ref. 9-10)
- overseeing effective implementation of QPP procedures

- verifying, through monitoring of ongoing activities and reviews of records, that ITS activities are performed correctly and in compliance with governing procedures, standards, policies, and regulations
- coordinating Corporate Quality and ISF Facility Quality activities to ensure appropriate oversight, in accordance with the required frequency
- developing, maintenance, and implementation of audit programs and schedules
- timely and appropriate feedback to functional area managers of the results of audits, surveillance, inspections, and monitoring activities

The Quality Manager and quality personnel will notify the Shift Supervisor of any significant adverse to quality condition pertaining to ITS SSCs, including operating and maintenance activities in progress.

9.1.2.2.10 Safety Review Committee

The SRC is responsible for reviewing and advising the ISF Facility Manager and COO on matters relating to the safe storage of SNF. The SRC will consist of a minimum of a Chairman and three members. Alternates may be substituted for regular members. The COO will designate, in writing, the SRC Chairman, members, and alternates.

The SRC will meet at least once before receipt of SNF for storage at the ISF Facility. The committee will also meet at least once annually following receipt of fuel, and at any time deemed necessary by the ISF Facility Manager or COO. A quorum will consist of three regular members or duly appointed alternates. At least one member of the quorum will be the Chairman or the Chairman's designated alternate.

At a minimum, the SRC will:

- Advise the ISF Facility Manager on matters related to safe storage of SNF.
- Perform or review audits of the following activities:
    - Safety evaluations performed by Independent Safety Reviewers (ISR) for procedures, and changes thereto, completed in accordance with 10 CFR 72.48. This review will normally be completed after implementation of the affected procedure or procedure change.
    - Safety evaluations for changes to SSCs ITS to verify that such changes do not require prior NRC approval in accordance with 10 CFR 72.48(c). The review may be completed after implementation of the change.
    - Conformance to provisions in the Technical Specifications and applicable license conditions.
    - Training and qualifications of ISF Facility staff.
    - Implementation of programs required by Section 9.7 and Technical Specifications, Section 5.
    - Actions taken to correct deficiencies in equipment or controls ITS.
    - Facility operations, modifications, maintenance, and surveillance related to ITS equipment or controls to verify that these activities are performed safely.

- Other activities and documents as requested by the ISF Facility Manager.

- Advise the ISF Facility Manager and the COO of the result of any of the above audits.
- Recommend to the ISF Facility Manager actions that will assist in the correction of identified deficiencies.
- Notify the COO of any safety significant disagreement between the SRC and the ISF Facility Manager within 24 hours.

The SRC will be responsible for review of:

- tests or experiments involving the safe storage of SNF that are not described in the SAR, to verify that such tests or experiments do not require prior NRC approval in accordance with 10 CFR 72.48(c)
- proposed changes to the Technical Specifications or the license
- violations of codes, regulations, orders, license requirements, or internal procedures/instructions that are important to the safe storage of SNF
- indications of unanticipated deficiencies in any aspect of design or operation of SSCs that could affect safe storage of SNF
- significant accidental, unplanned, or uncontrolled radioactive releases, including corrective action to prevent recurrence
- significant operating abnormalities or deviations from normal and expected performance of equipment that affects safe storage of SNF
- the performance of the corrective action system
- internal and external experience information related to the safe storage of SNF that may indicate areas for improving facility safety

Reports or records of these reviews will be forwarded to the ISF Facility Manager within 30 days following completion of the review.

9.1.2.2.11 Safety Reviews

Independent Safety Reviewers (ISR) are responsible for performing safety reviews on new activities and on changes to existing activities. Persons knowledgeable in the area under review will perform these reviews. The safety reviews will be completed before implementation of proposed activities. The safety review process shall include as a minimum:

- safety evaluations for changes to the facility or to procedures as described in the SAR, and tests or experiments not described in the SAR to verify that such actions do not require prior NRC approval in accordance with 10 CFR 72.48 (Ref. 9-10).
- Proposed changes to the programs required by Technical Specification, Section 5, to verify that such changes do not require prior NRC approval in accordance with 10 CFR 72.48.

Personnel other than the originator of the document shall perform safety reviews. ISR qualifications are discussed in Section 9.1.3.1.12.

9.1.2.2.12 Succession of Operational Authority and Responsibility

The ISF Facility Manager has overall responsibility and authority for the ISF Facility. To ensure continuity of operation and organizational responsiveness to off-normal situations, a normal order of succession and delegation of authority will be established. The ISF Facility Manager will designate, in writing, personnel qualified to act as ISF Facility Manager in his absence.

The Operations Manager is the senior management representative on site with authority and responsibility for matters pertaining to safe receipt, packaging, and storage of SNF; as well as compliance with *Proposed Technical Specifications*. When the Operations Manager is off site, the on-duty Shift Supervisor will assume these responsibilities.

9.1.3 Personnel Qualification Requirements

This section describes the minimum qualifications for onsite and supporting personnel. The resumes or other appropriate documentation of personnel in the positions listed below will be maintained on file to demonstrate compliance with the minimum requirements.

9.1.3.1 Minimum Qualification Requirements

ISF Facility personnel will be properly trained and qualified to perform assigned tasks before performing independent work at the ISF Facility. Until qualified, trainees will be directly supervised by a qualified individual when performing work. The qualified individual is responsible for trainee performance and performance of tasks. Training of ISF Facility personnel is discussed in Section 9.3.

Positions with minimum qualification requirements are provided in Sections 9.1.3.1.1 through 9.1.3.1.12. These minimum qualification requirements are based on meeting the requirements of ANSI N18.1-1971 for comparable positions. As a minimum, ISF Facility technical and operations personnel will have a high school diploma or general equivalency degree (GED).

9.1.3.1.1 ISF Facility Manager

The ISF Facility Manager shall have (1) a minimum of a baccalaureate in an engineering or physical science field and 10 years of experience in nuclear facility operations; and (2) successfully completed the academic portions of the *Operator Training and Certification Plan* (Ref. 9-6).

9.1.3.1.2 Operations Manager

The Operations Manager shall have a minimum of 8 years of nuclear facility experience. A maximum of 2 years of nuclear facility experience may be fulfilled by satisfactory completion of academic or related technical training on a one-for-one basis. The Operations Manager will be a Certified Operator in accordance with the *Operator Training and Certification Plan.*

9.1.3.1.3 Technical Services Supervisor

The Technical Services Supervisor shall have (1) a minimum of a baccalaureate in an engineering or physical science field and 3 years of professional level experience in nuclear facility operations; (2) the overall nuclear background necessary to determine when to call consultants or contractors for problems

beyond the scope of onsite support; and (3) successfully completed the academic portions of the *Operator Training and Certification Plan.*

9.1.3.1.4 Engineers

Engineers shall have a minimum of a baccalaureate in engineering or physical science field and 1 year of experience in their assigned discipline.

9.1.3.1.5 Shift Supervisor

The Shift Supervisor shall have a minimum of 4 years of experience in nuclear facility operations. A baccalaureate in engineering or a physical science may be substituted for 2 years of operations experience. The Shift Supervisor will be a Certified Operator in accordance with the *Operator Training and Certification Plan* (Ref. 9-6).

9.1.3.1.6 Certified Operators

Certified Operators shall (1) have a minimum of 2 years of experience in nuclear facility operations; and (2) be trained and certified as a Certified Operator in accordance with the *Operator Training and Certification Plan.*

9.1.3.1.7 Environmental, Safety and Health Manager

The ES&H Manager shall have a minimum of 4 years of experience at a nuclear facility in emergency planning, industrial safety, radiation protection, and radioactive waste, or a combination of these areas.

9.1.3.1.8 Radiation Safety Officer

The RSO shall have a minimum of a baccalaureate in science, health physics, or engineering and 5 years of health physics experience at a nuclear facility.

9.1.3.1.9 Supervisory Personnel

Supervisory operations and maintenance personnel shall have a minimum of a high school diploma or GED and 2 years of experience in the assigned functional area at a nuclear facility.

9.1.3.1.10 Quality Manager

The Quality Manager minimum qualifications are described in the QPP (Ref. 9-2).

9.1.3.1.11 Safety Review Committee Members

The SRC will collectively have experience and knowledge in the following functional areas:

1. SNF handling and storage
2. chemistry and radiochemistry
3. engineering
4. radiation protection

5. QA
6. physical security and safeguards information

SRC members may perform the reviews for more than one specialty area, provided they are competent in the area they review. If sufficient expertise is not available in the ISF Facility, reviews may be supplemented by outside consultants or other qualified organizations. Members of the SRC shall not review activities for which they have direct responsibility.

The Chairman of the SRC shall have as a minimum have a baccalaureate in engineering or physical sciences and 6 years of combined managerial and technical support experience.

SRC members performing reviews for areas 1 through 4 will have as a minimum a baccalaureate in engineering or related science. SRC members performing reviews in areas 5 or 6 must have a high school diploma or GED.

9.1.3.1.12 Independent Safety Reviewers

ISRs will meet the qualification requirements of ANSI/ANS-3.1-1993, Section 4.7.2 (Ref. 9-11). The Chairman of the SRC will designate the ISRs in writing.

9.1.4 Liaison with Outside Organizations

The ISF Facility is within the U.S. Department of Energy's (DOE) Idaho National Engineering and Environmental Laboratory (INEEL) site, a large, remote site with restricted access. The INEEL employs its own full-time security force, fire department, medical staff, and emergency response teams. Because the INEEL is remote, the INEEL infrastructure provides emergency services in accordance with the *Emergency Plan* (Ref. 9-7).

The DOE selected the ISF Facility site location based on these criteria:

- Proximity to current location of the fuel to be repackaged and stored within the ISF Facility.
- Operations to be performed at the ISF Facility are consistent with other operations in the INEEL site and with INEEL's mission.

The appropriateness of the selected site for ISF Facility operation is confirmed in Chapter 2 and in the *Environmental Report* (Ref. 9-8).

Section 9.1.1.3 further discusses interrelationships with contractors and suppliers for ITS SSCs.

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9.2 PRE-OPERATIONAL TESTING AND OPERATION

The purpose of the pre-operational testing at the ISF Facility is to ensure that the facility can safely receive, package, and load spent fuel into the ISF canister and place the loaded canisters in storage.

The pre-operational test program starts with acceptance testing of SSCs. This acceptance testing is performed by the construction organization and involves testing to verify compliance with construction specifications, procurement documents, and design requirements. This acceptance testing includes a functional test of the SSCs for proper system/component operation (e.g., testing of interlocks, load testing of cranes, system flow verifications). After acceptance testing is completed, the systems are turned over to the startup test organization for "dry-run" testing using mock fuel assemblies and canisters fabricated to the dimensions and weights of the actual components. Dry-run testing is an integrated test program that verifies system interface operations, procedure usage, and adequacy of personnel training before receipt of SNF. The main objective of the pre-operational test plan is to verify the integrity of the structures and equipment and to substantiate the safety analysis. The pre-operational testing includes off-normal operation scenarios. Overall goals of the pre-operational dry run are to:

- demonstrate the functionality of equipment
- verify adequacy of procedures used for receipt, transfer, and storage of SNF
- verify adequacy of staff training and qualifications to safely operate the ISF Facility
- develop proficiency with procedures involving radiation exposures to determine likely exposures for specific procedures and to consider alternative procedures to minimize exposures

9.2.1 Administrative Procedures for Conducting Test Program

ISF Facility administrative control procedures will be used for: 1) preparing, reviewing, approving, and conducting test procedures and instructions, and 2) evaluating, documenting, and approving the test results. The minimum requirements for planning and conducting tests are contained in Section 11 of the QPP (Ref. 9-2). The pre-operational test program consists of two separate but integrated phases, acceptance testing and dry-run testing. Following completion of pre-operational testing, operations testing will be performed on initial receipt of each fuel type. The ISF Facility Manager has overall authority and responsibility for both the pre-operational and operational testing.

The Chief Design Engineer is responsible for ensuring that acceptance tests during the pre-operational testing are identified, acceptance test procedures are developed, and testing personnel qualifications are identified. These acceptance test procedures at the ISF Facility will be reviewed and approved by the ISF Facility technical staff and test performance will be coordinated with the Construction Manager. Test procedures performed off site by equipment suppliers or contractors will be controlled in accordance with the QPP. The administrative process for conducting the initial test procedures will include provisions for review of the activities to identify and incorporate lessons learned into dry-run procedures.

The Operations Manager is responsible for ensuring dry-run tests are identified, developed, and performed by qualified personnel. Dry-run testing is performed, using mock fuel assemblies and canisters, to ensure that facility operations can be performed using the proposed operating procedures with qualified personnel before initial fuel receipt. The technical staff will review test procedures for

technical accuracy. The dry-run test procedures will be verified and validated by table-top reviews or plant walk-downs by personnel qualified to perform the test and approved by the ISF Facility Manager or Operations Manager. Pre-operational test procedures performed at the ISF Facility will contain the following minimum requirements.

- personnel qualifications
- objective(s)
- prerequisites
- applicable design, procurement, and/or facility license requirements
- description of test configuration
- test instructions
- QA inspection hold points (if required)
- acceptance criteria
- measuring and test equipment requirements
- test requirements and acceptance limits

Completed preoperational testing will by documented by test reports that will include as a minimum:

- item/system tested
- date of test
- test results and acceptability
- identification and signature of test personnel
- identification of measuring and test equipment used during test
- evaluation of test results for acceptability
- actions taken regarding any nonconformance noted

Following completion of pre-operational testing, test reports will be reviewed to determine the need to incorporate system modifications or procedure changes, based on lessons learned. When changes to the system design or procedures are warranted they will be reviewed by ISRs to ensure that they do not require prior NRC approval in accordance with 10 CFR 72.48 (Ref. 9-10). In addition, a fuel acceptance readiness review (FARR), as described in Section 9.2.3, will be performed to ensure that the ISF Facility equipment, procedures, programs, and staffing are in place before receipt of the first fuel assemblies and commencement of startup testing.

Startup testing will be performed during initial fuel receipt for each fuel type to verify compliance with calculated dose projections and heat removal aspects evaluated in the SAR (Ref. 9-3). The startup test plan will include the following elements as a minimum:

- tests and confirmation of procedures and exposure times involving actual radioactive sources
- direct radiation monitoring of DOE transfer cask, canister trolley shielding, and facility shielding (including plugs, covers, shield windows, doors, etc.) for radiation dose rates, streaming, and surface "hot spots"
- verification of effectiveness of the passive heat removal features associated with storage system
- plans and preparations for controlling radiological activities include, as a minimum:
    - ALARA reviews and planning
    - radiation work permits
    - hot particle controls
    - contamination, exposure, and airborne controls
    - alarms and monitoring systems
    - contingency plans to restore plant to a safe condition if unexpected results are obtained

The administrative process for conducting operational test procedures will include provisions for review of the activities to identify and incorporate lessons learned into facility design and operating procedures. In addition, design and operator training deficiencies will be identified, reviewed, and appropriate corrective actions taken. Changes to facility design or operations will be reviewed by the facility technical staff, and ISRs to ensure the change does not require prior NRC approval in accordance with 10 CFR 72.48 (Ref. 9-10). The ISF Facility Manager or designee approval of the changes is required prior to implementation.

9.2.2 Test Program Description

This section describes the pre-operational test objectives and the general methods for achieving those objectives, and discusses the bases for selection of acceptance criteria that will be used to evaluate the test results.

Pre-operational tests will closely simulate actual operations involving fuel receipt, fuel packaging, canister closure, and storage, to ensure that qualified ISF Facility staff using the operations procedures can safely perform operations. The testing program will be conducted using mock fuel assemblies, rods, or modules to simulate the different types of fuels to be handled in the FPA of the Transfer Area. Either a DOE transfer cask (Peach Bottom cask and DOE canister/basket) or mock cask will be used to simulate receipt operations. Mock ISF canisters (i.e., canisters similar in configuration and construction but not to final QA or QC standards) will be used to test handling equipment (fuel repackaging process) and canister closure operations (i.e., welding, nondestructive examination [NDE], vacuum drying, and helium backfilling). These mock ISF canisters will be used to pre-operationally test CHM operations including insertion of mock canisters into a storage tube. Verification of ALARA practices, which are not completely achievable during dry runs, will take place during the initial fuel loading.

Before pre-operational test performance, test personnel shall have a clear understanding of their duties and responsibilities. The following shall be completed before pre-operational testing:

- Personnel shall be trained and qualified per the approved training program.
- A pre-job briefing has been performed for affected staff.
- Hold and inspection points are clearly identified.
- Stop-work criteria and contingency plans are established to place the spent fuel in a safe configuration. (e.g., established guideline for how long a cask or canister may remain suspended from a crane)
- Personnel are aware of compensatory measures.
- Oversight and command and control responsibilities have been clearly established, including notification requirements.
- Specific radiological hazards are identified and controls are implemented.

Radiation dose rates will be verified during initiation of start-up testing to ensure that actual values are within prescribed limits.

The methods for accomplishing the objectives and the acceptance criteria that will be used to evaluate the test results will be included in the procedures and test instructions. In addition, the general prerequisites for performing the tests, including special conditions to simulate normal and off-normal operating conditions, will be included in the procedures and test instructions.

9.2.2.1 Physical Facilities

This section discusses the type of tests and inspections to be performed on the ISF Facility SSCs before receipt of SNF.

During construction, testing or inspections will be used to verify configuration, materials, performance, and quality for SSCs ITS (see Section 3.4 for a list of ITS items). The purpose of testing and inspections during construction is to verify that design requirements, specifications, and code criteria are satisfied. Construction, materials, operations, or quality that is found not to satisfy requirements will be identified as nonconforming and resolution/corrective action will be taken as required by the QPP (Ref. 9-2).

Vendor-supplied SSCs are procured, tested/inspected, and received in accordance with the QPP. Quality oversight of this process requires the use of pre-approved vendors with conforming QA programs. Purchased items will be accompanied by documentation of conformance with requirements specified by FWENC.

The construction organization will acceptance test/inspect SSCs (e.g., testing of interlocks, load testing of cranes, system flow verifications) before turnover to the ISF Facility operations organization for pre-operational testing, to ensure that individual systems and components operate properly and will perform as designed. The Chief Design Engineer is responsible for development of acceptance test/inspection procedures, and for review and approval of testing/inspection requirements provided by vendors before implementation. Table 9.2-1 lists the SSCs that will be acceptance tested/inspected. Satisfactory completion of the test/inspection will require conformance with the acceptance criteria specified in the test/inspection procedure. Section 9.2.1 presents the administrative process for testing/inspecting.

9.2.2.2 Operations

This section discusses those operations to be tested. Operations testing begins after completion of the construction and functional testing of SSCs. This section discusses the dry-run testing. Startup testing is described in Section 9.2.3.

Dry-run testing is an integrated system testing performed before initial fuel receipt to verify that the ISF Facility can be safely operated by individuals qualified in accordance with the *Operator Training and Certification Plan* using facility operating procedures (Ref. 9-6). Mock fuel assemblies and canisters are used to simulate actual operations. Dry-run testing will verify that these activities can be performed:

- Receipt Operations. Activities related to receipt of spent fuel at the ISF Facility, including unloading of the receipt cask from the transporter through transport to the FPA fuel receipt port.
- Packaging Operations. Activities performed in the FPA of the Transfer Area, where spent fuel is removed from the receipt containers (baskets or canisters), inspected, and placed in an ISF basket/canister in preparation for canister closure operations.
- Canister Closure Operations. Activities performed to prepare new ISF canisters and baskets for SNF loading, and activities associated with receipt of loaded canister from the FPA through closure of the ISF canister (lid weld, vacuum drying, helium backfill, and leak test). Special emphasis will be placed on verifying ability to satisfactorily perform the final closure weld.
- Loading Operations. Activities related to transferring sealed ISF canisters from the CCA to the Storage Area and loading them into storage tubes in the dry vault storage system.
- Unloading Operations. Activities relating to retrieving an ISF canister from an individual storage tube in the modular dry-vault storage system and transferring it either back into the FPA or into a licensed transportation device.
- Waste Processing Operations. Activities involving handling and processing of radioactive waste (e.g., liquid, compactable, contact, and non-contact waste types).

Pre-operational testing will be completed, results reviewed, and required corrective actions (e.g., procedure and equipment modifications) will be completed before receipt of fuel. The FARR is discussed in Section 9.2.3. Once the operational readiness is completed, the startup test program can commence.

9.2.3 Test Discussion

After pre-operational testing is complete, a FARR will be performed before receipt of SNF, to verify the ability of the ISF Facility and staff to safely receive, repackage, and store fuel. The FARR will consist of a programmatic and procedure review, equipment and staffing review, and a performance assessment of operators, support staff, and management. The FARR will cover the following areas:

Construction

Construction activities complete (as required), drawings updated and available in document control system, open items resolved, non-conformances corrected, acceptance construction test completed and approved, and inspections performed and accepted.

Engineering and Technical Support

Onsite technical staffing is adequate and available. Design control procedures are written and approved, required vendor information and manuals, design bases calculations, and as-built drawings are available as approved documents through the document control system.

Operations

Operating, off-normal, surveillance, and emergency response procedures are approved, operationally tested, and available in the document control system. Pre-operational testing including corrective actions for identified deficiencies and non-conformances, as required, are complete. Operational staffing is trained and adequate to support operations.

Training

Training procedures are written and approved, ISF Facility staff have completed required training.

Radiological Controls

Radiation protection procedures are approved, health physics personnel are trained, required radiation posting is completed, and radiological monitoring equipment has been tested and is operational.

Maintenance and Surveillance

Maintenance and surveillance procedures are approved, required spare parts is identified and available, post maintenance testing is complete as required, surveillances necessary to receive fuel are completed and current.

Organization and Management

Procedures affecting organization and management are approved and available through document control, adequately trained and qualified personnel available.

Security

Security procedures are approved, adequately trained and qualified personnel are available. Security equipment has been tested and is operational.

Fire Protection

Procedures are approved, fire detection/suppression systems have been tested and are operational, and adequate fire personnel are trained and available.

Emergency Response

Emergency plan implementing procedures are approved, agreements for support organizations are in place, required emergency equipment has been tested and is operational, and emergency response staff is trained and qualified.

Nuclear Safety

Criticality controls and fuel accountability control procedures, and procedures for fuel acceptance verification, are approved and available through document control.

The FARR team will consist of a team leader and support personnel with experience in operations, engineering and technical support, maintenance and surveillance, document control, security, fire protection, emergency response, and nuclear safety. The FARR team will develop a written report to document the results of their findings. Before commencement of startup testing, the FARR report will be presented to the ISF Facility Manager, who has approval authority for receipt of SNF.

A startup test plan and implementing procedures will be written and approved before receipt of SNF, to verify that the ISF Facility design bounds the calculated dose projections and the heat generation and removal aspects evaluated and presented in the SAR. Section 9.2.1 presents the elements of the startup test program. Startup testing will be performed on the first two fuel receipt shipments for each of the various fuel types to be handled by the ISF Facility.

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9.3 TRAINING PROGRAMS

The objective of the ISF Facility Training Program is to ensure that ISF Facility personnel have the knowledge and skills to safely and efficiently operate and maintain the ISF Facility in a manner that protects site personnel and public health and safety. ISF Facility Training Program includes General Employee Training (GET), radiation worker training, operator training, emergency plan training, job/task specific training, and security force training. These training programs are described below.

9.3.1 Program Description

Personnel requiring unescorted access to the ISF Facility must successfully complete GET. This training includes instruction in elementary radiation effects and basic aspects of radiation protection and meets the requirements of 10 CFR 19 (Ref. 9-16). In addition, GET covers a basic overview of facility operations, security practices, emergency plan, and QA requirements to ensure that personnel understand their responsibilities in performing assigned tasks safely and in accordance with ISF Facility programs and procedures. Successful completion of training will be documented by written examination.

Personnel requiring access to radiologically controlled areas of the ISF Facility must successfully complete additional site-specific radiological controls training. As a minimum, this radiation worker training will address:

- nature and sources of radiation
- methods of controlling exposure and contamination
- maintaining exposure ALARA
- radiation monitoring
- shielding
- dosimetry
- biological effects
- criticality hazards control
- applicable ISF Facility radiation protection procedures
- workers rights and responsibilities (10 CFR 19)
- minimizing radioactive waste and prevention of mixed waste
- use of protective clothing

Successful completion of radiation worker training will be documented by examination and demonstration of skills in the above topics.

Respirator protection training will be provided for personnel required to use respiratory protection devices, in accordance with 10 CFR 20, 29 CFR 1910.134, and NRC Regulatory Guide 8.15 (Refs. 9-17, 9-18, and 9-19).

Operation of equipment and controls ITS shall be limited to Certified Operators or personnel under their direct visual supervision. Certified Operators must successfully complete the *Operator Training and Certification Plan*, GET, and radiation worker training (Ref. 9-6). The *Operator Training and Certification Plan* is based on industry practices and principles employing the Systematic Approach to Training (SAT). Training requirements are based on analysis of job performance requirements to establish required knowledge level and skills. Explicit training needs and corresponding learning objectives and performance measures are generated from job task analyses. These training needs are then incorporated into lesson plans that identify learning objectives, training settings (e.g., classroom, required reading, on-the-job [OJT] training).

The Quality Manager is responsible for training of QA personnel, as described in the QPP (Ref. 9-2). Training of security personnel is conducted in accordance with the *Physical Protection Plan* and training of emergency response personnel is described in the *Emergency Plan* (Refs. 9-5 and 9-7).

Training of maintenance personnel is developed based on site-specific training assessments and qualification. The Technical Services Manager is responsible for establishing training and qualification requirements for maintenance personnel.

9.3.2 Retraining Program

This section describes the retraining program. Retraining is training performed on a recurring basis to ensure that personnel maintain knowledge and skill levels, and to correct identified deficiencies in personnel knowledge or performance.

GET is required annually, with emphasis on changes in radiation protection, emergency planning, and management policies. Radiation worker and respirator protection retraining will also be required annually with attention to Radiation Protection Program changes, weaknesses observed in personnel performance, and lessons learned.

The *Operator Training and Certification Plan* provides the retraining process for certified operators (Ref. 9-6). The Quality Manager is responsible for QA personnel retraining, in accordance with the QPP. Security personnel retraining is discussed in the *Physical Protection Plan* and emergency response personnel retraining is discussed in the *Emergency Plan*.

Training effectiveness is evaluated through written examinations and practical performance evaluations. Written examinations will require a passing grade of 80 percent or better, and practical performance will be evaluated based on pass/fail.

Changes to processes, programs, and procedures, modification to the ISF Facility or equipment, and relevant nuclear industry events will be evaluated to determine training needs. Items determined to be applicable to the ISF Facility will be included into the appropriate initial and retraining training programs.

9.3.3 Administration and Records

The ISF Facility Manager has overall responsibility to ensure that personnel are adequately trained to perform assigned tasks. Specifically, the ISF Facility Manager is the certifying authority and shall designate, in writing, those personnel authorized to supervise and/or operate ITS equipment and controls.

The Administrative Services Manager is responsible for ensuring that ISF Facility training programs are implemented and maintained. These duties include:

- identifying training requirements, lesson plans developed and conducted
- developing lesson plans
- scheduling and conducting training
- maintaining status of personnel qualifications

The Administrative Services Manager also has additional specific training requirements for emergency response personnel and security personnel, described in the *Emergency Plan* and the *Physical Protection Plan* (Refs. 9-7 and 9-5).

The Operations Manager is responsible for performing the Job/Task Analysis to identify the training requirements for the *Operator Training and Certification Plan* (Ref. 9-6). The Operations Manager is also responsible for identifying weaknesses in the training program and recommending changes and/or enhancements.

The Technical Services Manager is responsible for ensuring that maintenance training requirements are identified, lesson plans are developed and conducted, and:

- identifying qualification requirements for maintenance positions
- ensuring only currently qualified maintenance personnel are assigned to applicable tasks

Shift supervisors are responsible for ensuring that individuals reporting to them are trained and qualified to perform assigned tasks and that such tasks are performed according to ISF Facility procedures.

Training records are completed when performed by ISF Facility personnel and retained by the Administrative Services Manager. The training record requirements for the various plans (e.g., *Operator Training and Certification Plan*) are described in each of those plans. As a minimum training records include:

- lesson plans
- documentation of personnel attendance
- name of instructor
- date of training, examination, or other evaluation
- copy of written examinations (if applicable)
- job performance evaluation including results
- evaluation results for walk-through or oral examinations

Training records will be retained as quality documents in accordance with the QPP (Ref. 9-2). Training records will be maintained up to date and retained for a minimum of 3 years unless a longer period of time is specified by the specific training program.

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9.4 NORMAL OPERATIONS

This section describes the procedure controls associated with ITS operations, and the management system for maintaining records related to the operation of the ISF Facility.

9.4.1 Procedures

Procedures are used to document the performance of ITS activities and compliance with regulatory requirements. ISF Facility procedures are to be followed verbatim to ensure that activities are conducted safely and in accordance with regulatory requirements. If a procedure cannot be performed as written, the person performing the activity will stop the activity and, if necessary, place the system or component in a safe condition. The Shift Supervisor will be notified of procedure inadequacies and the activity will not resume until corrective actions have been implemented.

ITS activities and activities affecting quality are accomplished in accordance with approved and documented instructions, procedures, and drawings. Detailed written procedures developed, reviewed, and approved in accordance with ISF Facility requirements are used to perform operations, maintenance, surveillance, and testing activities. The following are the categories, criteria, and attributes of the types of procedure that will be implemented and maintained at the ISF Facility.

Administrative Procedures are instructions to ISF Facility personnel to provide an understanding of operating philosophy and management policies. These procedures include instructions for personnel conduct and procedures to develop, review, change, and approve facility procedures. Administrative procedures describe activities to ensure that personnel safety, working environment, procurement, and other general activities of the ISF Facility are conducted with quality and in a safe manner.

Radiation Protection Procedures are used to implement the radiation control program and ensure compliance with 10 CFR 20 and ALARA principles (Ref. 9-17). The procedures describe the methods for:

- use of environmental monitoring and measurement equipment
- qualifications and training of radiation protection personnel
- performance of surveys, measurements, and assessment of radiological conditions
- control of radiation hazards
- generation, review, and control of radiation work permits

Maintenance Procedures are used to implement the preventative and corrective maintenance program. Preventative maintenance procedures, including calibrations, are performed at a specified frequency to preclude degradation of ISF Facility SSCs. Corrective maintenance procedures are used to repair broken or degraded equipment. These maintenance procedures identify the level of qualification necessary for performance and provide a record of the activities performed, the date performed, and the person(s) performing the activity. In addition, prerequisites to perform the maintenance are identified, as well as post-maintenance testing requirements. Prerequisites include such things as facility operation mode, equipment configuration, or verification of alternate equipment availability.

Surveillance Procedures are used to implement the surveillance requirements of the ISF Facility operating license, which includes the Technical Specifications, to verify that plant operations and equipment operability comply with the conditions of the ISF Facility operating license. Surveillance procedures are performed periodically and before return to service after equipment maintenance or modification. Surveillance procedures will identify the level of qualification necessary for performance and will establish requirements for methods used to provide a record of the activities performed, the date performed, and the person(s) performing the activity. These procedures will also identify the source requirement for the surveillance, period for performance, acceptance criteria, and actions necessary if the acceptance criteria are not satisfied.

Operating Procedures provide instructions for normal and off-normal operations, including receiving, handling, repackaging, and storing spent fuel, and other operations ITS, such as those identified in the Technical Specifications. Procedures for operating equipment ITS include specification of certification/qualification requirements for personnel performing the procedure. Operating procedures also provide instructions for operation of equipment such as the storage area monitoring equipment and other plant equipment.

QA Procedures prescribe necessary elements of quality oversight to ensure that activities ITS are conducted in a controlled manner in accordance with the QPP (Ref. 9-2).

Review, Change, and Approval Process

Written administrative procedures control the approval of new procedures and subsequent revisions. Administrative procedures specify the format, review process, and approval requirements. The ISF Facility Manager is responsible for ensuring that the administrative process for facility processes is implemented.

New procedures and subsequent revisions to procedures are reviewed by appropriate subject matter experts on the facility staff and by affected organizations. Before implementation, ISRs will review new procedures and subsequent changes to ensure, as a minimum, the proposed activity or change does not require prior NRC approval in accordance with 10 CFR 72.48 (Ref. 9-10).

The ISF Facility Manager or designee must approve new procedures and subsequent revisions before issue. The procedure reviews and approval process will be documented in accordance with the QPP (Ref. 9-2).

9.4.2 Records

Administrative procedures have been implemented to ensure that quality records are identifiable and retrievable. The Technical Services Manager will maintain records of historical operation of the ISF Facility. ISF Facility personnel are responsible for ensuring that QA records are legible, accurate, complete, and identifiable to the item or activity to which they apply. In addition to QA records, the following records will also be maintained in accordance with the regulatory reference(s) provided:

- records of spills or other abnormal occurrences involving the spread of radiation in and around the facility, equipment, or site, in accordance with 10 CFR 72.30(d)(1)
- as-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used and/or stored, and of locations of possible inaccessible contamination such as buried pipes, in accordance with 10 CFR 72.30(d)(2)
- a list contained in a single document and updated no less than every 2 years of the following, in accordance with 10 CFR 72.30(d)(3):
    - areas designated and formerly designated as restricted areas as defined under 10 CFR 20.1003
    - Areas outside of restricted areas that require documentation under 10 CFR 72.30(d)(1)
- records of cost estimate performed for the decommissioning funding plan, in accordance with 10 CFR 72.30(d)(4)
- receipt, inventory, disposal, acquisition, and transfer of all spent fuel and high-level radioactive waste in storage, as required by 10 CFR 72.72(a)
- records of physical inventories and current material control and accounting procedures as required by 10 CFR 72.72(b) and 10 CFR 72.72(c)
- records of changes in the facility design, of changes in procedures, and of tests and experiments made pursuant 10 CFR 72.48(c)(1). These records must include a written evaluation that provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to 10 CFR 72.48 (c)(2), pursuant to the requirements of 10 CFR 72.48(d)(1).
- records of employee certification as required by 10 CFR 72.44
- QA records as required by 10 CFR 72.174
- radiation protection program records as required by 10 CFR 20 Subpart L which includes
    - program contents, audits, and reviews
    - radiation surveys
    - determination of prior occupational dose
    - planned special exposures
    - individual (worker) monitoring results
    - dose to individual members of the public
    - test of entry control devices for very high radiation areas
- records of changes to the physical protection plan as required by 10 CFR 72.44(e) and 72.186, and other physical protection records required by 10 CFR 73.21 and 10 CFR 73.70
- Records of occurrence and severity of natural phenomenal as required by 10 CFR 72.92

- record copies of:
    - SAR and updates per 10 CFR 72.70
    - reports of accidental criticality or loss of special nuclear material as required by 10 CFR 72.74 and 10 CFR 73.71
    - material status reports per 10 CFR 72.76
    - nuclear material transfer reports per 10 CFR 72.78
    - *Physical Protection Plan* per 10 CFR 72.180
    - Other records and report per 10 CFR 72.82

The following records will be maintained as QA records in accordance with the QPP:

- operating records, including maintenance records on significant equipment
- records of off-normal occurrences and events associated with radioactive releases
- environmental survey records and environmental reports
- radiation monitoring readings and/or records (e.g., strip charts)
- report of preoperational test acceptance criteria and test results
- written procedures

The above records will be stored in accordance with the QPP (Ref. 9-2). Security records, including security training and qualification records, will be maintained in accordance with the *Physical Protection Plan* (Ref. 9-5).

9.5 EMERGENCY PLANNING

The ISF Facility will repackage and store SNF; therefore, the *Emergency Plan* was written to meet the requirements of 10 CFR 72(b) (Refs. 9-7 and 9-10). In accordance with 10 CFR 72(b), the *Emergency Plan* provides for two classifications of accidents: "alerts" and "site area emergencies." The *Emergency Plan* developed emergency action levels for postulated accidents in each of the following areas:

- transfer cask accidents
- fuel packaging accidents
- fuel storage accidents
- external events (loss of power, earthquake, flood, extreme wind, lightning, accidents at nearby sites, volcanism, and aircraft impacts)

Because the ISF Facility site is remote, the DOE or its support contractors primarily provide emergency support services described in the *Emergency Plan.*

The ISF Facility Manager, or in the manager's absence, the Operations Manager or Shift Supervisor(s) provide the onsite management and interface with the DOE INEEL infrastructure to respond to an event requiring implementation of the *Emergency Plan.*

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9.6 DECOMMISSIONING PLAN

The *Proposed Decommissioning Plan* describes the proposed ISF Facility decommissioning activities and funding method (Ref. 9-20), to demonstrate that it can be safely and effectively decommissioned. The DOE will provide funding for decommissioning in accordance with the FWENC/DOE Contract (Ref. 9-21).

The *Proposed Decommissioning Plan* was developed in accordance with NRC Regulatory Guide 3.65 and discusses the following topics (Ref. 9-22):

- plans for safely and efficiently decommissioning the ISF Facility
- ISF Facility design features to facilitate decommissioning
- estimate of decommissioning costs and financing method
- tentative selection and description of the plan decommissioning method
- basis for tentative selection of decommissioning method

To facilitate decommissioning, the records required by 10 CFR 72.30(d)(1) through 72.30(d)(3) will be maintained as quality records until decommissioning is complete and the ISF Facility license is terminated (Ref. 9-10).

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9.7 PHYSICAL SECURITY AND SAFEGUARDS AND CONTINGENCY PLANS

The purpose of the physical protection program is to establish and maintain the physical protection of the SNF stored in the ISF Facility in accordance with 10 CFR 72 Subpart H, *Physical Protection*, and applicable portions of 10 CFR 73 (Refs. 9-10 and 9-23).

The ISF Facility physical protection program is described in the *Physical Protection Plan* (Ref. 9-5). The plan includes as appendices the *Security Personnel Training and Qualification Plan* and the *Safeguards Contingency Plan*.

Because the *Physical Protection Plan* contains safeguards information and is controlled and protected in accordance with 10 CFR 73.21 and 10 CFR 2.790, it has been submitted for NRC review under separate cover (Ref. 9-24).

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9.8 REFERENCES

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9-4. Foster Wheeler Environmental Corporation (2001), *Proposed Technical Specifications*, ISF-FW-PLN-0034.

9-5. Foster Wheeler Environmental Corporation (2001), *Physical Protection Plan*, ISF-FW-PLN-0029.

9-6. Foster Wheeler Environmental Corporation (2001), *Operator Training and Certification Plan*, ISF-FW-PLN-0031.

9-7. Foster Wheeler Environmental Corporation (2001), *Emergency Plan*, ISF-FW-PLN-0021.

9-8. Foster Wheeler Environmental Corporation (2001), *Environmental Report*, ISF-FW-RPT-0032.

9-9. Foster Wheeler Environmental Corporation (2001), *NQA-1 and ASME QA Plan,* RDO-FW-PLN-0003.

9-10. Title 10, Code of Federal Regulations, Part 72, *Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste,* Office of the Federal Register, Washington, D.C.

9-11. American Nuclear Society, ANS/ANSI-3.1-1993, *Selection, Qualification, and Training of Personnel for Nuclear Power Plants.*

9-12. U.S. Nuclear Regulatory Commission, NUREG-0554, *Single-Failure-Proof Cranes for Nuclear Power Plants.*

9-13. U.S. Department of Energy (1999), *Hoisting and Rigging Standard*, DOE-STD-1090, U.S. Department of Energy, Washington, DC, 403 pp. March.

9-14. National Fire Protection Association, NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water Based Fire Protection Systems*. 1998. 106 pp.

9-15. NFPA 72, *National Fire Alarm Code*. 1996. 205 pp.

9-16. Title 10, Code of Federal Regulations, Part 19, *Notices, Instructions, and Reports to Workers: Inspection and Investigations*, Office of the Federal Register, Washington, D.C.

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9-19. U.S. Nuclear Regulatory Commission, Regulatory Guide 8.15, *Acceptable Programs for Respiratory Protection.*

9-20. Foster Wheeler Environmental Corporation (2001), *Proposed Decommissioning Plan*, ISF-FW-PLN-0027.

9-21. DOE-ID (2000), *Contract Award and Notice to Proceed, Contract No. DE-AC07-001D13729, Spent Nuclear Fuel Dry Storage Project*, U.S. Department of Energy, Idaho Operations Office, Idaho Falls, Idaho, May.

9-22. U.S. Nuclear Regulatory Commission, Regulatory Guide 3.65, *Standard Format and Content of Decommissioning Plans for Licensees Under 10 CFR Parts 30, 40, and 70* (August 1989).

9-23. Title 10, Code of Federal Regulations, Part 73, *Physical Protection of Plants and Materials*, Office of the Federal Register, Washington, D.C.

9-24. Title 10, Code of Federal Regulations, Part 2, *Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders,* Office of the Federal Register, Washington, D.C.

Table 9.2-1
Acceptance Tests

Structure, System, or Component	Summary of Test
Cask receipt crane	Functional test of controls and interlocks and load test (NUREG-0554 criteria) (Ref. 9-12)
Cask trolley	Functional test of controls and interlocks, load testing (NUREG-0554)
FHM	Functional test of controls and interlocks and load test (includes power manipulator system), Test criteria based on NUREG-0554, ANSI/ASME B30.2, and CMAA Specification 70.
MSMs	Functional test per vendor recommendation
Decanning machine	Functional test using mock cans
Worktable system	Functional testing to verify capability to tip, rotate, and cut canisters and cans
Canister trolley	Functional test of controls and interlocks, load testing (NUREG-0554)
CCA	Testing in accordance with ASME B30.2 and DOE-STD-1090 Section 7.3 (Ref. 9-13)
Canister welding equipment	Functional/demonstration test on mock canister weld areas
Vacuum drying system	Functional test per vendor recommendation
Helium back fill system and leak test system	Functional test per vendor recommendation
CHM	Functional test of controls and interlocks and load test (NUREG-0554 criteria)
Storage tube	Fit test to verify shield plug and cover plate fit up
Special lifting fixtures	Load test, functional test to verify grapple/load engagement
Transfer Tunnel doors	Functional test of controls and interlocks
HVAC system	Functional test to include controls and interlocks, ventilation flow and balance, and HEPA filter efficiency
Instrumentation and controls	Channel functional tests and channel calibrations
Fire protection equipment	Testing will be performed to satisfy the following: NFPA 25(1998) - water suppressions (Ref. 9-14) NFPA 72 (1999) - detection and alarms (Ref. 9-15)
Normal and emergency lighting	Functional test

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Figure 9.1-1
FWENC Corporate Organization

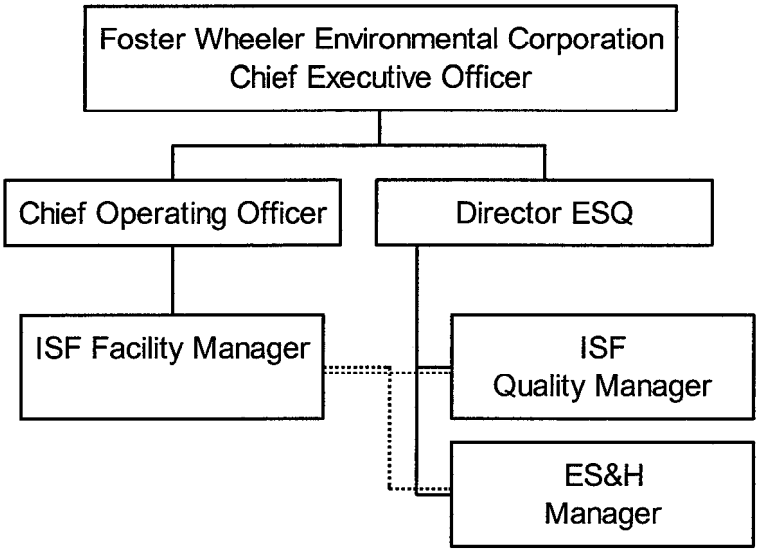

Figure 9.1-2
Design and Construction In-House Organization

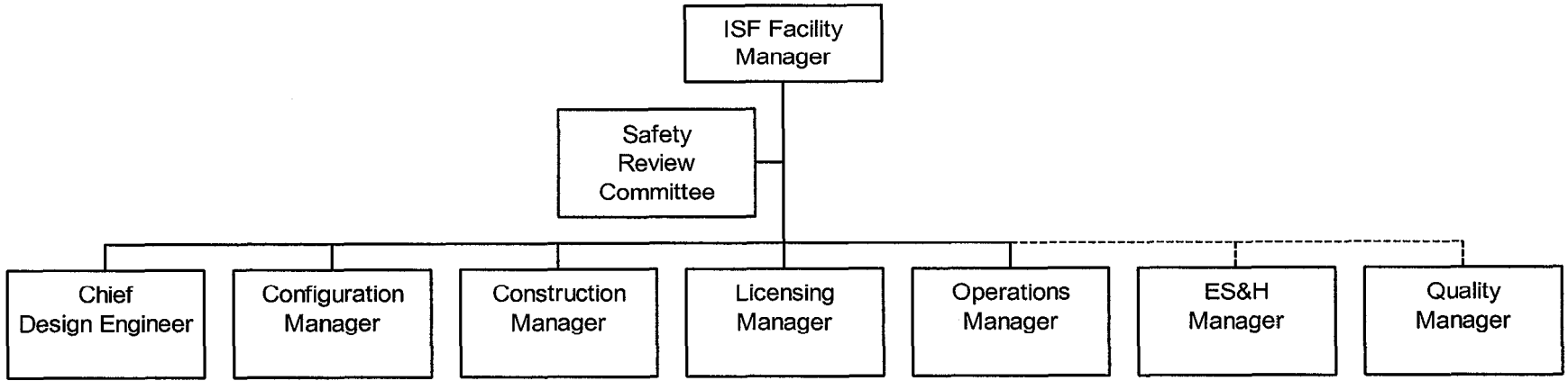

Figure 9.1-3
Technical Staff

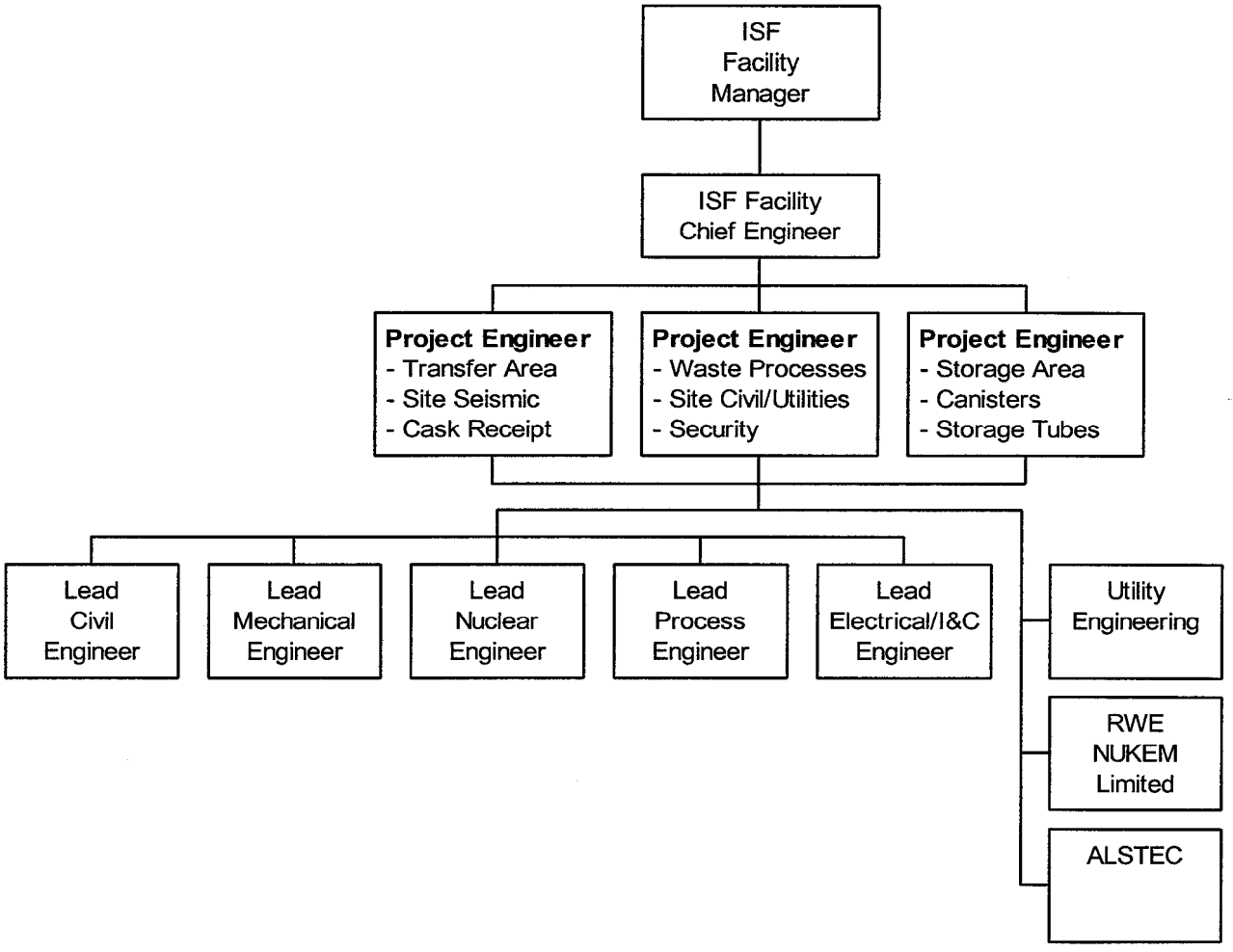

Figure 9.1-4
Onsite Organization (Operations)